

USSR

KAGANOV, N. I. and GIBEL'YANICHUR, A. N.

"Uniaxial Antiferromagnetic Close to the Collapse Point"

Leningrad, Fizika Tverdogo Tela, vol. 13, No. 10, October 1971,  
pp 2993-2995

Abstract: Starting from the expression for the energy of a single-axis antiferromagnetic, in which the second anisotropy constant is set equal to zero for the sake of simplicity, the authors consider the characteristics of the antiferromagnetic in a strong magnetic field directed at an angle to the axis of anisotropy and analyse the magnetization of the antiferromagnetic near the collapse point. The motion of the magnetic moments under the action of a varying magnetic field is considered when the field is directed along the constant field, and an expression is found for the longitudinal magnetic susceptibility. An expression is also derived which describes the behavior of the antiferromagnetic close to the collapse field. It is noted that in the derivation of these formulas, the thermal motion and, in particular, the fluctuations that lay

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USSR

KAGANOV, M. I., and OMEL'YANCHUK, A. N., Fizika Tverdogo Tela, vol. 13, No. 10, October 1971, pp 2993-2995

turn out to be important at the collapse point were completely neglected. However, the analysis is useful since it predicts the system behavior in the framework of the Landau theory. The authors are with the Institute of Physical Problems, Moscow.

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UDC 624.074.4

USSR

MANEVICH, A. I. and KAGANOV, M. Ye., Dnepropetrovsk Department, Institute of Mechanics, Academy of Sciences, Ukrainian SSR

"Stability and Weight Optimization of Reinforced Spherical Shells During External Pressure"

Kiev, Prikladnaya Mekhanika, Vol 9, No 1, Jan 73, pp 20-26

Abstract: The problem of the stability and weight optimization of spherical shells, reinforced by square wafers, during external pressure is solved on the basis of the linear theory of structurally orthotropic shells, with account taken of rib eccentricity. It is shown that the effect of rib eccentricity is, within wide limits, independent of the sphere radius. The problem of determination of the optimal reinforcement parameters is solved. Analysis shows that supplementary restrictions upon geometric parameters or stresses can decrease considerably the efficiency of wafer-type shells, as well as the advantage of external reinforcement in comparison to internal reinforcement.

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USSR

UDC: 681.3

KAGANOV, S., LEVCHENKO, V., PECHERSKIY, B.

"Some Problems of Organizing Commands for Exchange of the M-220 Computer With a Communications Line"

V sb. Elektronno-vychisl. tekhn. i programmir. (Computer Technology and Programming--collection of works), vyp. 3, Moscow, "Statistika", 1970, pp 57-62 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V696)

Translation: Requirements are formulated for these commands, their structure is hypothesized and exchange algorithms are formulated. Organization of the operation of the exchange commands is described under conditions of reception and transmission of information. Authors' abstract.

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USSR

KAGANOV, V. Yu., BLINOV, O. M., KONYASHIN, V. I., and CHUYKO, Yu. N., Moscow  
Institute of Steel and Alloys

"Investigation of the Possibility of Controlling Steel Composition by the  
Method of Thermoelectromotive Force"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Chernaya Metallurgiya, No 9,  
1970, pp 171-174

Abstract: An investigation was made of the combined effect of C, Si, Mn, and Cr on the thermoelectric properties of steel relative to VR-5 thermoelectrodes and VR-5/20 thermocouples at various average temperatures of sample cooling. The experiments were conducted on cooling metal samples taken from the furnace at 1020°C to 740°C. A statistical model developed for the thermoelectric properties of Fe alloys can be applied to the process of ShKh15 steel production in the temperature range indicated above. The model makes it possible, if the chemical composition of the steel is known, to determine its thermoelectric properties, or, if the content of three admixtures is known, to determine the content of any fourth admixture (the deviation from the real value does not exceed  $\pm 0.05\%$ ). The model also demonstrates the possibility of the simultaneous determination of chemical composition according to four admixtures.

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KAGANOV

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

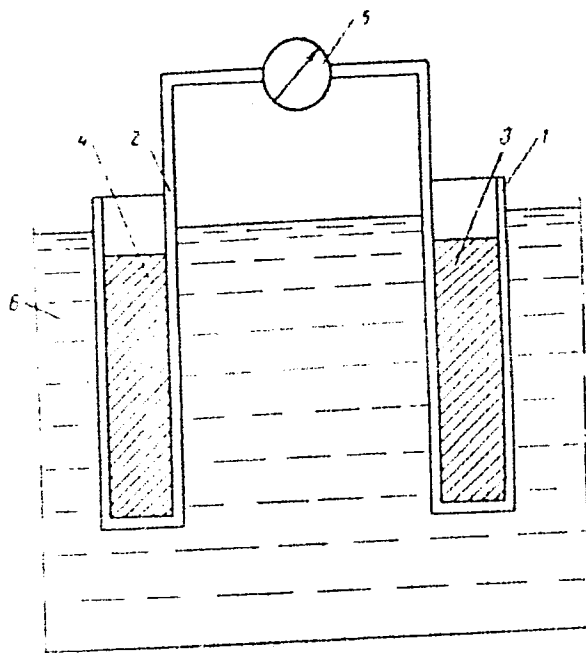
228320 DETERMINING IMPURITIES IN ELECTROCONDUCTING  
MELT involves using a device comprising two  
similar thermo-electric electrodes (1) and (2)  
made in the form of thin wall cylindrical vessels  
from high-temperature melting material and filled  
with different heat-conducting materials (3) and  
(4), e.g. pure metals or eutectic alloys whose  
melting point is lower than the lowest possible  
temperature of the melt being examined. Electrodes  
immersed in the melt (6) represent differential  
thermo-couple. E.m.f. measured by potentiometer  
(5) at the instant when both materials filling the  
electrodes are melting will be proportional to the  
content of impurities in the melt.

12.6.65 as 1011859/26-25. V.YU.KAGANOV & S.M.  
DUKARSKII. CENTRAL LABORATORY OF AUTOMATION.(3.6.69)  
Bul 31/8.10.68. Class 421. Int.Cl.G 01 n.

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AAO108706



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19900463

AA0108706

AUTHORS: Kaganov, V. Yu.; Dukarskiy, S. M.

Tsentral'naya Laboratoriya Avtomatiki

3/4

19900464



1/2 039 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--STATISTICAL ANALYSIS OF THE DECARBURIZATION DYNAMICS OF A MOLTEN  
METAL -U-  
AUTHOR-(05)-KAGANOV, V.YU., SURGUCHEV, G.D., DERKACHEV, YE.N., MUSALOV,  
G.I., TITOV, V.T.  
COUNTRY OF INFO--USSR *K*  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN MET. 1970, 13(1), 167-71  
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--DECARBURIZATION, LIQUID METAL, STATISTIC ANALYSIS, OXYGEN,  
CARBON, FLUID DYNAMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1981/0594

STEP NO--UR/0148/70/013/001/0167/0171

CIRC ACCESSION NO--AT0050601

UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0050601

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REMOVAL OF C FROM A LIQ. METAL IS A COMPLEX PROCESS, NOT ALWAYS SUSCEPTIBLE TO RECOGNIZED FORMS OF ANAL. RESULTS ARE GIVEN OF STATISTICAL ANAL. OF RANDOM FUNCTIONS DETG. THE DYNAMICS OF DECARBURIZATION OF FUSED METAL BY THE INTRODUCTION OF O. THE CONNECTION BETWEEN AMT. OF O ADDN. AND RATE OF DECARBURIZATION ( $U(t)-V(t)$ ) IS DETD., THOUGH THIS IS DIFFICULT IN VIEW OF THE MULTIPLE PROBABILITY SURFACES OF THE RANDOM FUNCTIONS, AND HENCE, ONLY THE SIMPLEST APPROXNS. CAN BE EXAMD. CURVES ARE GIVEN TO COMPARE THE MATH. EXPECTATION AND MEAN SQUARE DEVIATIONS OF EXPTL. MELTS WITH RESULTS ACTUALLY OBTAINED. THE C CONTENT EXERCISES ONLY A SMALL EFFECT ON THE MATH. EXPECTATION OF  $V(t)$ . DECARBURIZATION IS A NONSTATIONARY EFFECT FOR STEEL MELTS, OWING TO A COMBINATION OF INTERNAL COMPN. FACTORS.

UNCLASSIFIED

USSR

UDC: 621.396.6.049.75(088.8)

KAGANOV, Ye. A., LAGUTKIN, G. V.

"A Method for Automatically Drilling Two-Sided Printed-Circuit Boards"

USSR Author's Certificate No 261868, filed 12 Jun 67, published 2 Jun 70  
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V309 P)

Translation: This Author's Certificate introduces a method for automatical-  
ly drilling two-sided printed-circuit boards. Both foil layers are con-  
nected in an electrical circuit, and when this circuit is closed by the  
drill, a signal is produced which indicates completion of the working pass  
and enables continuation of work. Ye. M.

USSR

UDC 621.382.3.029.5/6

KAMENETSKIY, Yu. A., KAGANOVA, I. I.

"Equivalent Circuit of Silicon Microwave Transistors with the Side Capacitance of the Emitter Taken Into Account"

Elektron. tekhnika. Nauch.-tekhn. sb. Poluprovodn. pribory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, Issue 6(56), pp 16-26 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B195)

Translation: Using a Type 2T316 transistor as an example, the equivalent circuit is considered of a low-power silicon transistor operating in the microwave range. As the result of a theoretical analysis it is shown that with a decrease of the width of the base region necessary for increasing the critical frequency of transfer current, the effect of the side emitter capacitance increases in comparison with the depth of the emitter layer. As a result a significant dependence of the input resistance of the emitter on the operating frequency develops. The experimental studies conducted demonstrated the legitimacy of the assumptions made during computation. It is probable the results obtained are also correct for germanium transistors of this same class. 9 ill. 2 tab. 3 ref. V. B.

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USSR

UDC: None

KAGANOVA, I. M. and KAGANOV, M. I.

"Čerenkov Sound Radiation by a Particle Moving Through Metal"

Leningrad, Fizika Tverdogo Tela, No 7, 1973, pp 2119-2125

Abstract: This paper discusses the phenomenon in which a charged particle moving through a metal generates an electromagnetic field which brings conductivity electrons out of equilibrium and the electrons produce ions, with the transformation of electromagnetic waves into sound waves if the speed of the particles is greater than the speed of sound. In their analysis of this phenomenon, the authors limit themselves to considering an isotropic metal with an isotropic law of electron dispersion, and expressions are found for the longitudinal and transverse waves propagated in an isotropic body. It is found that the full intensity of the sound radiated at all frequencies is determined by the radiation of the longitudinal wave and that the spectral density of the transverse wave is essentially a function of the frequency. The authors note that the formulas obtained are interesting for analyzing the possibility of using charged particles as sources of ultrasonic waves.

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USSR

KAGANOVICH, A. Z.

"Diagram of Plasticity of VT5-1 Titanium Alloy"

Tr. Ural'sk. Politekhn. In-ta [Works of Urals Polytechnical Institute],  
Collection 202, 1971, pp 98-101, (Translated from Referativnyy Zhurnal,  
Mekhanika, No 4, 1972, Abstract No 4 V1155 by I. M. Kershteyn).

Translation: The plastic properties of VT5-1 titanium alloy are studied as a function of certain factors in the rolling process: temperature, stress state, structure of metal. Laboratory tests were performed under monaxial extension and compression at six temperatures from 600 to 1,100°. Notched specimens as well as smooth specimens were studied in extension, in order to change the nature of the stressed state. The specimens were cut from a slab (they had large-grained macrostructure) and from a hot-rolled sheet (fine-grained macrostructure). The data produced were used to construct dependences of ductility of the alloy on temperature, macrostructure and type of stressed state. It was found that at all temperatures the ductility indicator of the large grained metal is significantly lower than that of the small grained metal. This difference increases with temperature and at  $T \geq 900^\circ$ , reaches 40%. It was also found that as the relative hydrostatic pressure change from +2.5 to -0.58 (this parameter was characterized by the

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KAGANOVICH, A. Z., Tr. Ural'sk. Politekhn. In-ta, Collection 202, 1971, pp 98-101.

ratio of hydrostatic pressure to intensity of tangential stresses), the ductility indicator increased by a factor of 2-2.5. The possibility is noted of using the data produced to determine the limiting permissible deformation of metal during rolling, and also to estimate its ductile properties on the basis of the volume of a stamped slab with various degrees of compression of the initial blank.

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USSR

UDC 621.383.4

BOGDANOVICH, V.B., KAGANOVICH, E.B., SVECHNIKOV, S.V.

"Photoresistors On A Basis Of CdS Films Chemically Precipitated From An Aqueous Solution"

Poluprovodn. tekhn. i mikroelektronika. Resp. Mezhd. sb. (Semiconductor Technology And Microelectronics. Republic Interdepartmental Collection), 1972, Issue 8, pp 91-94 (from RZh:Elektronika i yeye primeneniye, No 11, Nov 1972, Abstract No 11B319)

Translation: Raster [rastrovyy] and coordinated--sensitive photoresistors are developed on the basis of highly photosensitive CdS films. Their parameters and characteristics are presented. It is shown that according to a number of parameters the photoresistors produced surpass the industrial and favorably differ from the former by the technological reproducibility of the parameters, the low cost, and the simple production technology. 6 ill. 1 tab. 3 ref. Summary.

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1/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--DETERMINATION OF BETA SITOSTEROL IN VEGETABLE RAW MATERIAL -U-  
AUTHOR--(05)-KSENOFONTOVA, YE.V., MUKHINA, M.V., KHALETSKIY, A.M.,  
~~KAGANOVICH, E.L.~~, BELKEVICH, P.I.  
COUNTRY OF INFO--USSR  
SOURCE--VESTSI AKAD. NAVUK BELARUS. SSSR, SER. KHIM. NAVUK 1970, (1),  
103-5  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--STEROL, PROCESSED PLANT PRODUCT, SOLVENT EXTRACTION, CHEMICAL  
PURIFICATION, SPECTROPHOTOMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/0190

STEP NO--UR/0419/70/000/001/0103/0105

CIRC ACCESSION NO--AP0119186

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0119186

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISSOLVE PHYTOSTEROL (0.03 G) IN CH SUB2 CL SUB2 AND APPLY ON THE STARTING LINE OF A LAYER OF UNBOUND AL SUB2 O SUB3. DEVELOP WITH ETO SUB2 AND LOCATE THE BETA SITOSTEROL IN UV LIGHT. ELUTE IT FROM THE POWDER WITH HOT ME SUB2 CO. EVAPORATE ME SUB2 CO AND DISSOLVE RESIDUE IN 25 ML ACOH. TO 5 ML ADD 2 ML 0.5PERCENT BENZOYL PEROXIDE AND BOIL 3-5 MIN. AFTER COOLING, CAREFULLY ADD 0.5 ML CONCD. H SUB2 SO SUB4 AND DIL. TO 25 ML WITH ACOH. MEASURE ABSORBANCE AT 690 MMU OR WITH A RED FILTER. THE LINEAR RANGE IS 0-280 MUG PER ML. THE METHOD IS USED TO ANALYZE UNSAPONIFIABLE ROSINS FROM PEAT WAXES.

FACILITY: LENINGRAD. KHIM.-FARM. INST., LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC:669.71'721:620.193;539.319

KOMAROV, M. F., BUIYNOV, N. N., KAGANOVICH, L. I., Institute of Metal Physics,  
Academy of Sciences USSR

"Microstructure and Corrosion Properties of Aluminum-Magnesium Alloy  
Following Extended Natural Aging"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 2, 1975,  
pp 358-364

Abstract: Electron microscope studies of aluminum-magnesium alloys with 11% Mg and corrosion tests under stress are performed. The electron microscope studies indicate that extended natural aging forms hexagonal close-packed zones with ordered structure. The corrosion testing and electron-microscope data indicate that the reason for the sharp decrease in corrosion-cracking resistance of aluminum-magnesium alloys following extended natural and low-temperature aging is separation of the  $\beta$ -phase along the grain boundaries as a continuous film.

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USSR

UDC 669.295:537.533.35

KOMAROVA, M. F., BUYNOV, N. N., IOFFE, A. YA., KAGANOVICH, L. I., and GAVRILOVA, A. B., Institute of Metal Physics, UNTs / expansion unknown / Academy of Sciences USSR

"Effect of Small Additions of Beryllium, Titanium, and Zirconium on the Structure and Properties of AL9 Alloy"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 1, 1973, pp 140-148

Abstract: Metallographic and electron microscopic studies were conducted and the mechanical properties of AL9 alloy, alloyed with Be, Ti, and Zr, determined. The hypoeutectic alloy has the following composition (in %): 7 Si, 0.3 Mg, 0.015 Cu, 0.1 Zn, and 0.25 Fe with varying small amounts of the alloying elements. Results of analysis showed that the small amounts of Be, Ti, and Zr, taken in limits from 0.001 to 0.1% (separately or together) do not alter the nature of the eutectic in the alloy, its quantity and silicon particle size in the eutectic or the size of the solid solution nucleus between the eutectic colonies. Investigation in the work of alloying showed changes in the kinetics of decomposition of the supersaturated solid solution, acceleration of the formation of the metastable beta'-phase and silicon particles, and refining of the particles and an increase in their number. These factors promoted increased alloy strength where joint alloying increased this strength by 30-40%. Six figures, 13 bibliographic references. 1/1

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1/2 009 UNCLASSIFIED PROCESSING DATE--02 OCT 70  
TITLE--DYNAMICS OF A CHANGE IN GRANULOMETRIC COMPOSITION DURING THE  
DEHYDRATION OF SOLUTIONS IN A FLUIDIZED BED -U-  
AUTHOR--(03)-NALIMOV, S.P., KAGANOVICH, YU.YA., KOZLOVSKIY, V.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 581-6

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--CHEMICAL DRYING, PARTICLE DISTRIBUTION, PARTICLE SIZE,  
FLUIDIZED BED, AQUEOUS SOLUTION, ZINC COMPOUND, SULFATE, SOLUTION  
CONCENTRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1989/1925

STEP NO--UR/0080/70/043/003/0581/0586

CIRC ACCESSION NO--AP0108254

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0108254

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PARTICLE SIZE DISTRIBUTION STUDIES WERE CONDUCTED ON ZNSO SUB4 POWDERS PRODUCED BY DEWATERING (DRYING) OF AQ. SOLNS. CONTG. 12-25PERCENT ZNSO SUB4 IN FLUIDIZED BEDS, 360-560 MM DEEP, AT TEMPS. OF 210 AND 260DEGREES AND WATER REMOVAL RATES OF 1100 AND 1600 KG-M PRINE2 HR, RESP. DRYING AT 260DEGREES YIELDED 0.44-4.0 MM PARTICLES WITH A LARGE FRACTION OF 1.4 AND A SMALLER FRACTION OF 2.5 MM DIAM. PARTICLES; 210DEGREES DRYING YIELDED LARGER PARTICLES IN LARGER FRACTIONS. LOW RESIDENCE TIMES (LOW BED HEIGHTS) YIELDED LARGE FRACTIONS OF 2.5 MM DIAM. PARTICLES AND SMALL AMTS. OF 1.4 MM DIAM PARTICLES. AT LONG RESIDENCE TIMES (560 MM DEEP BEDS) THE NO. OF SMALL 1.4 MM DIAM. PARTICLES PRODUCED WAS 3.5 TIMES LARGER THAN IN 360 MM DEEP BEDS. REDUCING THE ZNSO SUB4 CONCN. FROM 25 TO 21PERCENT INCREASED THE RESIDENCE TIME AND PRODUCED A 4 FOLD INCREASE IN THE YIELD OF SMALL PARTICLES.

UNCLASSIFIED

USSR

UDC: 537.31

OKUN', L. S., ~~KAGANOVSKIY, I. P.~~, LEPIKHOVA, Ye. Ye., ZATULOVSKIY, L. M.,  
CHAYKIN, P. M., LEVINSON, D. I., All-Union Scientific Research Institute  
of Electrothermal Equipment

"Investigation of Resistivity Distribution in a Single Crystal Germanium  
Strip by the Single-Probe Method"

Moscow, Izv. AN SSSR: Ser. Fizicheskaya, Vol 36, No 3, Mar 72, pp 614-618

Abstract: The distribution of resistivity is studied by single-probe measurements on a single crystal germanium strip with spacing down to 10  $\mu$ . The strips were grown by the Stepanov method in directions  $\langle 110 \rangle$  and  $\langle 112 \rangle$ , the plane of the strip being (111). The specimens were doped with Ga and Sb for  $p$ - and  $n$ -conductivity respectively. It was found that the longitudinal nonhomogeneity is greater than the transverse nonhomogeneity, and that both types of nonhomogeneity increase with a reduction in the discrete measurement step. The distribution of nonhomogeneity in the resistivity of longitudinal specimens is basically periodic with a periodicity of 150-400  $\mu$ , depending on the conditions of growth. In transverse specimens the distribution was found to be more random with a periodicity of 1/2

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OKUN', L. S. et al., IAN SSSR: Ser. Fiz., V 36, 1972, pp 614-618

100-125  $\mu$ . Fine impurity bands of about 10  $\mu$  were observed which are apparently due to the periodicity of the crystallization process occasioned by liberation of the latent heat of fusion. The higher homogeneity observed in p-germanium is attributed to the weaker relation between the effective coefficient of distribution of Ga and periodic fluctuations in growth rate.

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USSR

UDC 576.851.48.097:616-006.04

MAYKO, I. I., KAGANS'KA, M. B., RASHBA, O. Ya., SHVAYGER, M. O., MANDRIK, T. P.,  
and ZHEREBILO, O. S., Institute of Microbiology and Virology, Academy of  
Sciences Ukrainian SSR

"Antitumor Activity of Polysaccharide-Containing Complexes of Escherichia coli"

Kiev, Mikrobiologicheskii Zhurnal, Vol 33, No 5, Sep/Oct 71, pp 548-552

Abstract: The antitumor activity of polysaccharide-containing complexes derived from the alkali-forming mutant KM of E. coli was studied in experiments on mice infected with sarcoma 37, lymphadenoma NK/Ly, lymphoma LyO-1, Ehrlich's tumor, and sarcoma K-239. The following polysaccharide-containing complexes were used: Boivin's antigen; complex antigen prepared according to O. Westfal; complex antigen prepared according to G. Freeman; "alkali" polysaccharides obtained by heating the bacterial mass with alkali; and exocellular polysaccharides isolated from the culture liquid. The highest activity was exhibited by Boivin's and Westfal's antigens, which inhibited the growth of most of the tumors studied. Toxicity (LD<sub>50</sub> in mg/kg) was 130, 525, 2200, 3000, and 1700 for Boivin's antigen, Westfal's antigen, Freeman's antigen, "alkali" polysaccharides, and exocellular polysaccharides, respectively. The monosaccharide composition of the polysaccharide-containing complexes was determined chromatographically (table).

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KAGANSKIY, A. S.

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U Pribl. 1. IANSTENROY NAVEZHROSTI VEROTOPN. HLIV. TICHESTRIKH  
K<sup>4</sup> KANTENISTIK OKEANA (GA. PUL. NO. 559 ENOY 66677)

for a good reliability of certain of the data presented in this paper of the Ocean (in the northern part of the Pacific Ocean).

b.

V. A. Hill and A. S. Stevens

TRUDY, HANNO-INSITUATION, ENY  
INSTITUT ANTIKONTRAST  
1980, 6b  
Pp. 210-222

1 FEB 1968

Translated by:  
Editor: V. Polveralurov  
Typed by: P. Lind  
H. Kralis

Particular attention should be given to the following:

D. S. NAVY, OFFICE OF THE CHIEF OF NAVAL PERSONNEL  
WASHINGTON, D. C. 20350

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1/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--SOLUBILITY IN A UREA, AMMONIUM NITRATE, AMMONIUM DIHYDROGEN  
PHOSPHATE, WATER QUATERNARY SYSTEM -U-  
AUTHOR--(02)-KAGANSKIY, I.M., BABENKO, A.M.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 742-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--SOLUBILITY, UREA, AMMONIUM NITRATE, PHOSPHATE, WATER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3004/2016 STEP NO--UR/0080/70/043/004/0742/0749  
CIRC ACCESSION NO--AP0132277  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132277

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY. IN THE 5 QUATERNARY MIXTS. CONSISTING OF UREA, NH SUB4 H SUB2 PO SUB4, AND AQ. SOLN. OF NH SUB4 NO SUB3 (CONTG. 10, 20, 30, 40, AND 50PERCENT NH SUB4 NO SUB3) WAS MEASURED. LIO. PHASE COMPN., EQUIL. SOLID PHASES, AND CRYSTN. TEMPS. WERE DETD. NO FORMATION OF DOUBLE SALTS TAKES PLACE. THE COMPNS. OF SOLNS. CONTG. MAX. (N PLUS P SUB2 O SUB5) (25.5-29.2PERCENT AT 0DEGREES AND 24-1-28.0PERCENT AT MINUS 10DEGREES) ARE TABULATED. FACILITY: SEVERODONETSK. FILIAL, GIAP, SEVERODONETSK, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--ACTUAL SOLUBILITY IN A UREA POTASSIUM NITRATE WATER SYSTEM -U-

AUTHOR--(C3)--BABENKO, A.M., KAGANSKIY, I.M., VAKHRUSHEV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--ZP. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 749-53

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES, AGRICULTURE

TOPIC TAGS--SOLUBILITY, UREA, POTASSIUM NITRATE, FERTILIZER, LOW  
TEMPERATURE EFFECT, CRYSTALLIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1499

STEP NO--UR/0080/70/043/004/0749/0753

CIRC ACCESSION NO--AP0138500

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0138500

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE PURPOSE OF THIS INVESTIGATION WAS TO ESTABLISH COMPS. WHICH WOULD YIELD THE MAX. PLANT NUTRIENTS. USING SOLNS. IN WHICH THE N DOUBLE BOND K SUB2 O WAS APPROX. 0.42:1, A LIQ. FERTILIZER WAS OBTAINED WITH A CRYSTN. TEMP. OF MINUS 10DEGREES CONTG. 49PERCENT OF N PLUS K SUB2 O AND A MIXT. WITH A CRYSTN. POINT OF MINUS 20DEGREES CONTG. 40PERCENT OF N PLUS K SUB2 O. A MIXT. WITH A CRYSTN. POINT OF 0DEGREES CONTG. N PLUS K SUB2 O 52.3PERCENT WAS ALSO OBTAINED BY STARTING WITH A N DOUBLE BOND K SUB2 O RATIO OF 0.42:1. SOLNS. CONTG. A N DOUBLE BOND K SUB2 O RATIO OF 1:1 WERE ALSO OBTAINED BUT THEIR TOTAL CONTENT OF NUTRIENTS WAS LOWER. THUS, SOLNS. WITH A CRYSTN. TEMP. OF 0DEGREES CONTAINED N PLUS K SUB2 O 33.8PERCENT, AND WITH A CRYSTN. POINT OF MINUS 10DEGREES THE N PLUS K SUB2 O WAS 29.2PERCENT. FACILITY: SEVERODONETSK. FILIAL, GIAP, SEVERODONETSK, USSR.

UNCLASSIFIED

1/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--ACID BASE PROPERTIES OF SOME AZO DERIVATIVES OF SALICYLIC AND ALPHA  
HYDROXYNAPHTHOIC ACIDS -U-

AUTHOR--(03)-MUKHINA, N.A., TETENCHUK, K.P., KAGANSKIY, M.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. VSES. KHIM. OBSHCHEST. 1970, 15(3), 351-2

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AZO COMPOUND, SPECTROPHOTOMETRIC ANALYSIS, HYDROGEN ION  
CONCENTRATION, NITROGEN, BENZENE DERIVATIVE, HYDROXYL RADICAL, ACID BASE  
COMPLEX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605012/C05 STEP NO---UR/0063/70/015/003/0351/0352

CIRC ACCESSION NO--AP0140267

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140267

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING VALUES OF  $pK_a(OH)$  AND  $pK_a(CO\ SUB2\ H)$ , RESP., WERE CALCD. FROM SPECTROPHOTOMETRY IN AQ. SOLNS. OF THE FOLLOWING SHOWN ON MICROFICHE. FROM CORRELATION OF THESE WITH THE HAMMETT EQUATION THE ACIDITY OF COMPS. OF THE 1ST GROUP IS ONLY APPROX. FITTED TO THE HAMMETT EQUATION FOR THE PHENOLIC DISSOCN. THE TRANSMISSION COEFF. OF THE N SUB2 GROUP IS LOW: 0.14. INTRODUCTION OF STRONGLY POLAR GROUPS IMPROVES THE HAMMETT EQUATION CORRELATION, INDICATING A DIRECT POLAR INTERACTION BETWEEN THESE GROUPS AND THE REACTIVE CENTER. COMPS. IN THE 2ND GROUP CAN BE ADEQUATELY FITTED INTO THE HAMMETT EQUATION, BUT LACK OF DATA ON  $pK_a$  VALUES OF HYDROXYNAPHTHOIC ACIDS MADE IMPOSSIBLE A CALC. OF THE TRANSMISSION COEFF. OF N SUB2 IN THIS GROUP. FACILITY: NOVOKUZNETSK. NAUCH.-ISSLED. KHIM. FARM. INST., NOVOKUZNETSK, USSR.

UNCLASSIFIED



USSR

UDC 632.95

SUVOROV, B. V., ~~KAGARLITSKIY, A. D.~~, KAN, I. I., YEMEL'YANOV, V. L., KUTCHANOV, R. T., and PAVLOV, YE. A.

"A Means of Obtaining 3-Cyanopyridine"

USSR Author's Certificate No 311914, filed 28 Jan 70, published 11 Oct 71  
(from Referativnyy Zhurnal -- Khimiya, No 10 (II), 1972, Abstract No 10N604P  
by T. A. Belyayeva)

Translation: 3-CNC<sub>5</sub>H<sub>4</sub>N (I) is obtained by oxidative ammonolysis of 2-R-5-R'  
C<sub>5</sub>H<sub>3</sub>N (II) (R and R' = alkyl, alkenyl) over a transition-metal catalyst.  
A mixture of steam and air (300-500 and 100-300 mole, respectively, to each  
mole of (II) is used as an oxidizing agent. Through a reaction tube (1100X22mm)  
filled with granulated catalyst (V<sub>2</sub>O<sub>5</sub> and TiO<sub>2</sub> in a 1:16 molar ratios) are  
passed II (R=Me. R'=CH=CH<sub>2</sub>), water Air, and NH<sub>3</sub> at a rate of 23 g, 950 g, 30001,  
and 75 g respectively for each liter of catalyst every hour at a temperature  
of 370° for 10 hours (time of contact: 0.4 seconds). The catalyst is washed  
with petroleum ether, extracted with CHCl<sub>3</sub> and dried over Na<sub>2</sub>SO<sub>4</sub>. I is  
separated by rectification. The yield is 83.2%, boiling point 100-4°/24,  
melting point 50.4°. I is used as a plant-growth stimulant in agriculture,  
and for the production of nicotinamide. 1/1

USSR

UDC: 681.327

BERKOVICH, S. Ya., KAGANOVSKIY, A. Ya., Institute of Control Computers

"An Associative Memory"

USSR Author's Certificate No 332499, filed 14 Mar 69, published 13 Apr 72  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 1, Jan  
73, abstract No 18372 P)

Translation: Various designs of associative memories are known in which a multivalued response is distinguished by software and hardware methods. An associative memory is known in which the storage unit is divided into individual modules. Each module has its own chain of priority, and there is, in addition, an overall chain of priority which operates from a register in which the signals from detectors of the corresponding module are summed in each digital place.

A disadvantage of the priority chain is the low operating speed and the large number of elements. The use of this method of distinguishing a multivalued response is feasible only in associative memories with a large number of words in a module. Besides, in this case there is the difficulty of processing data words whose length exceeds the word length of the

1/2

. USSR

BERKOVICH, S. Ya., KAGANOVSKIY, A. Ya., USSR Author's Certificate No 332499  
memory. The purpose of this invention is to increase the speed of the  
associative memory. This is achieved by adding a decoder in which the number  
of outputs is equal to the number of words in the associative recording  
medium and by connecting each output to the corresponding inputs of each  
module.

2/2

- 28 -

AP0046178

Abstracting Service:  
GEOPHYSICAL ABST.

5/70

Ref. Code:  
UR0068

91747z Improvement in the process for drying ammonium sulfate. Kagasov, V. M.; Khlebnikov, O. P.; Pinchugov, V. N. (Karagand. Met. Zavod, Karaganda, USSR). *Koks Khim.* 1970, (2), 29 (Russ). To diminish the crystal size in by-product  $(NH_4)_2SO_4$  from coking ovens it is recommended to increase the vacuum above the fluidized layer in the dryer, to increase the discharge frequency to 58-60 times/hr, to abolish the chain spreader, and to adjust the thickness of the fluidized layer to 45-55 cm. The investigation of the drying process revealed that the melting of the salt in the dryer can be avoided to a great extent without impairing the drying.

A. P. Mueller

REEL/FRA  
19781255

18

Acc. Nr:

A/0055201

Abstracting Service:

CHEMICAL ABST. 6 70

Ref. Code:

4R 0065

113167q Heat transfer from condensing water vapor to a moving film of mineral oil. Geller, Z. I.; Kagermanov, S. M. (USSR). *Khim. Tekhnol. Topl. Masel* 1970, 15:2, 29-32 (Russ). The title study was conducted in a closed system on a 40-mm diam. by 1100 mm. standing, smooth-wall, stainless-steel tube. Low-pressure, 101-6°, satd. steam condensing and moving at  $\leq 0.005$  m/sec and 2-oils with 20° viscosities ( $\nu$ ) of 18.8 and 385 cST heated externally to 20, 30, and 40° were used at linear liq. flow rates of 3.2-152 kg/m hr. The mode of flow was obsd. visually and photographically and was detd. to be laminar or wavy (ripple)-laminar. The heat-transfer coeff. ( $\alpha$ ) was detd. for Reynolds ( $Re$ ) nos. 0.07-22, Prandtl ( $Pr$ ) nos. 74-1072, Kutateladze nos. 33-55, and Nusselt nos. 51-1817.  $\alpha$  depended on the hydrodynamics of the oil film, and the phys. characteristics, of the oil.  $\alpha$  increased as the  $\nu$  of the oil increased and decreased with tube length;  $\alpha$  initially of the order of 1050 and 700 kcal/m<sup>2</sup> hr degree for the 30 and 40°, oils, resp., decreased sharply to  $\sim 50$  at a tube height of 400 mm. Calcd. and exptl. detd.  $\alpha$  agreed within a satisfactory std. deviation.

DPJR J 006

REEL/FRAME  
19840417

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KAGERMAZOV, U. A.

50:DP93 53272

02 JUNE 70

UDC: 616-092

CORRELATION BETWEEN GENERALIZED AND LOCAL ELEMENTS IN THE MORBID ORGANISM

(Article by U. A. Kagermazov)

Russian, No. 4, April 1971, pp. 70-75; Vestnik Akademii Meditsinskikh Nauk SSSR,

Problems pertaining to the correlation between generalized and local elements in the sick organism could be understood and properly interpreted only in the light of the teaching of dialectical materialism on integrity. Materialistic dialectics uses integrity of system to refer to the integrity formed by interaction between parts, or the "aggregate of components that interact in some way" (V. G. Afanas'yev).

The whole and the part perform different functions in higher and lower systems, which cannot help but introduce uniqueness in their correlation. Thus, after losing a part, a mechanical system viewed as an aggregate loses its integrity, "its basic property of being a complete set of its parts." But a biological system, on the contrary, retains its integrity even when a part is lost, because it is "capable, under specific objective conditions, of replacing the function of one element by the function of others" [1]. Thus, while in mechanical systems in the correlation between the whole and the part priority belongs to the part, in biological systems the whole and the part priority belongs to the part, in biological systems the whole and the part are related. "Different parts of the body," remarks V. I. Lenin, "exist only as they are related. A hand separated from the body is only a hand in name (Aristotle)".

On the other hand, the fact that parts are subordinate to the whole by no means signifies that they are equal before a biological system. In other words, one cannot cut off some part from a biological system. In the danger of impairing its integrity. Correlative correlation in a higher system does not signify simple interaction between equipotential parts, rather a type of correlation in which some parts play a leading, dominant role in maintaining vital activity of the integral system, while others perform subordinate functions. The principles of such correlative correlations between parts in living systems are formed in the course of evolution and are determined entirely by the interests of preserving viability of the species. According to this principle, organs or parts that were formed at later terms of phylogenetic development begin to subordinate, control,

USSR

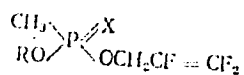
UDC 547.341.26.118.07

KAINOV, Yu. N., ISAYEV, V. L., and STERLIN, R. N.

"A Method of Producing 2,3,3-Trifluoroallyl Esters of O-Alkylmethylphosphonic or Thionphosphonic Acids"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 16, Jun 73, Author's Certificate No 375298, Division C, filed 11 Aug 71, published 23 Mar 73, p 51

Translation: This Author's Certificate introduces a method of producing 2,3,3-trifluoroallyl esters of O-alkylmethylphosphonic or thionphosphonic acids of the general formula



where R is an alkyl, and X is oxygen or sulfur. As a distinguishing feature of the patent, an O-alkylmethylphosphonic or thionphosphonic acid chloride is reacted with 2,3,3-trifluoroallyl alcohol in an organic solvent such as ether in the presence of a hydrogen chloride acceptor such as a tertiary amine with subsequent isolation of the goal product by conventional methods.

1/1

USSR

UDC[537.226+537.311.33]:535

VERESHCHAK, M. F., ZHETRAVEV, A. K., and KALPOV, D. K.

"Temperature Dependence of Mössbauer Spectrum Parameters of Natural Magnetite"

Temperaturnaya zavisimost' parametrov messbauerovskogo spektra prirodnoy magnetita (cf. English above), Institute of Nuclear Physics, Academy of Sciences Kazakh SSR, Alma-Ata, 1971, 10 pp, ill., bibliography with three titles, No 3460-71 Dep (from RZh-Fizika, No 2, Feb 72, Abstract No 2XL1430 DEP from authors' abstract)

Translation: Hyperfine structure parameters of the Mössbauer spectrum of natural magnetite  $Fe_3O_4$  are studied in the wide temperature range of 80-900°K. The temperature dependence of values of the internal magnetic fields on two sublattices is determined; the Curie temperature is found to be equal to  $(885 \pm 9)^\circ K$ . It is found that the isomeric shift of the spectrum of sublattice A (tetrahedral) increases by 0.15 mm/sec in the 450-650° K temperature range. Below 113° K the spectrum changes, due to localization of electrons in the tetrahedral sites of the Fe sublattice.

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USSR

UDC 543.544

2

ERISTAVI, D. I. (Deceased), BROUCHEK, F. I., ERISTAVI, V. D., ERISHVILI, L.A.,  
KAKABADZE, A. G., and KUTSIAVA, N. A., Georgian Polytechnical Institute Imeni  
V. I. Lenin, Tbilisi

"Investigation of the Uranyl ion Sorption on the Anion Exchange Resins  
Saturated With Anionic Ligands"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1165-1167

Abstract: Using the roentgenographic method, the sorption of uranyl ions from aqueous solutions with pH = 2.5-3.0 on fluoride, carbonate, and ethylenediaminetetraacetate forms of anion exchange resins has been shown to take place. On the basis of the results of IR spectroscopic studies the following stages were proposed for the formation of anionic complexes of uranyl in anion exchange phase: 1) formation of a neutral complex of uranyl with the anionic ligand; 2) association of this complex with anionic ligand in the ion exchange phase, and 3) formation of an ionic pair "anion complex-cation group R<sup>+</sup> from the anion exchange resin". Starting sorption curves were plotted for different hydrodynamic conditions and from them the values of dynamic sorption capacities for uranium of the anion exchange resin AN-2FB, AV-16, and AV-17 have been determined, establishing effectiveness series of the sorbents studied.

1/1

USSR

ITSIN, V. B., KAKALOV, V. A.

UDC: 551.596:534.143

"On a Method of Evaluating the Interference Immunity of a Detector of Wide-Band Signals Under Conditions of a Nonstationary Interference Field"

Moscow, Tezisy dokl. 3-y Vses. shkoly-seminara po stat. gidroakustike, 1971  
—sbornik (Abstracts of Papers of the Third Soviet-Wide Seminar-School of  
Statistical Hydroacoustics, 1971—collection of papers), 1972, pp 230-237  
(from RZh-Fizika, No 5, May 73, abstract No 5Zh646 by B. P. Sukhin)

Translation: The procedure for evaluating a wideband signal detector under conditions of nonstationary interference is based on comparing analogous circuits in a stationary field with respect to the output effect of the post-detector filter. The result is presented in the form of loss of interference immunity evaluated by equivalent broadening of the band of the post-detector filter. The experimental data were obtained on a device which realizes an adaptive method of processing with limitation. The given quantitative estimates of relative loss of interference immunity may be considered typical; the procedure can be used to compare the effectiveness of different detectors under identical, real conditions.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--EFFECT OF CHROMIUM IMPURITIES ON THE EPR SPECTRUM OF MN PRIME2  
POSITIVE IN MAGNESIUM OXIDE -U-  
AUTHOR-(02)-SORIN, L.A., KAKAZEY, N.G.  
COUNTRY OF INFO--USSR  
SOURCE--UKR. FIZ. ZH. (RUSS. ED.) 1970, 15(3), 521-3  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--EPR SPECTRUM, CHROMIUM, MAGNESIUM OXIDE, METAL IMPURITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/0457 STEP NO--UR/0185/70/015/003/0521/0523  
CIRC ACCESSION NO--AP0135920  
UNCLASSIFIED

2/2 017

CIRC ACCESSION NO--AP0135920

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BASIC MECHANISM OF INTERACTION BETWEEN MN PRIME2 POSITIVE AND CR PRIME3 POSITIVE IN A DIAMAGNETIC MGO MATRIX WAS STUDIED BY USING EPR SPECTRA. THE EPR SPECTRUM OF MNSO SUB4 IN MGO AFTER EVAPN. OF WATER WAS IDENTICAL WITH THOSE DESCRIBED PREVIOUSLY. WITH INCREASING CR PRIME3 POSITIVE CONC., THE LINWIDTHS OF THE MN PRIME2 POSITIVE SPECTRA INCREASED SIMULTANEOUSLY WITH A DECREASE OF THE LINE AMPLITUDES. DIPOLE DIPOLE INTERACTION WAS FOUND AS THE BASIC MECHANISM OF THIS BROADENING. THE DEPENDENCE OF THE LINWIDTH OF MN PRIME2 POSITIVE SPECTRA ON CR PRIME3 POSITIVE CONC. QUAL. CORRESPONDED TO PREVIOUSLY SUGGESTED THEORY (C. KITTEL, E. ABRAHAMS, 1953).

FACILITY: INST. PROBL. MATERIALOVED., KIEV, USSR.

UNCLASSIFIED

USSR

K UDC:666.1.036.23

KRAS'KO, A. S., Engineer, KAKHANOVICH, V. S., TYUSHKEVICH, N. I., Candidates of Technical Sciences, CHEPURKIN, A. A., Engineer, Belorussian Affiliate of Power Institute Imeni, G. M. KRZHIZHANOVSKIY

"Frequency Sensor for Continuous Testing of Glass Fiber Thickness During Production"

Moscow, Steklo I Keramika, No 9, Sep 1970, Pages 16-18

Abstract: Methods currently used for testing the thickness of glass fiber are "passive," that is, performed after production and have low reliability. This article presents certain results from the investigation of a frequency method of testing the thickness of glass fiber during production. The method is based on the relationship between natural oscillating frequency of a drawn string and linear mass and tightness. An experimental model of a frequency sensor has been developed. Production tests of the sensor have confirmed its useability. The error does not exceed 4%, with 95% confidence. In the device, a vibrator forming one end support of the length of fiber drawn causes the fiber to oscillate, and the frequency of natural oscillations is measured by a photosensor.

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UDC 8.74

USSR

KAKHAROV, T. K.

"Computation Problems of Simulating Logical Dynamic Control Systems on Digital Computers"

V sb. Sistemotekhnika (Systems Engineering--collection of works), Kiev, 1971, pp 255-269 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V502)

No abstract

1/1

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1/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--LEUKOPOIETINS IN ASEPTIC INFLAMMATION -U-  
AUTHOR--(04)-KAKHETELIDZE, M.G., SHLYGIN, A.N., DOLGINA, Z.M., DUBROVSKAYA,  
R.M.  
COUNTRY OF INFO--USSR  
SOURCE--PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA, 1970,  
VOL 14, NR 2, PP 79-83  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BLOOD SERUM, DOG, HORSE, HYDROCARBON, PROCESSED PLANT PRODUCT,  
LEUKOPOIESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1988/0022

STEP NO--UR/0396/70/014/002/0079/0033

CIRC ACCESSION NO--AP0105121

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 023

CIRC ACCESSION NO--AP0105121

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. CHANGES OF LEUKOPOIETIC ACTIVITY OF THE BLOOD SERUM OF DOGS AND HORSES WERE STUDIED IN ASEPTIC INFLAMMATION CAUSED BY TURPENTINE. BLOOD PROVED TO BECOME ENRICHED WITH LEUKOPOIETINS, WHICH IN INTACT ANIMALS STIMULATED DIFFERENTIATION OF STEM CELLS IN THE DIRECTION OF GRANULOCYTOPOIESIS, PROLIFERATIVE ACTIVITY OF GRANULOCYTES, THEIR MATURATION AND LIBERATION INTO THE PERIPHERAL BLOOD. ACCUMULATION OF LEUKOPOIETINS WAS PHASIC IN CHARACTER; THEIR MAXIMAL AMOUNT WAS REVEALED IN THE BLOOD 3 TO 7 DAYS AFTER ADMINISTRATION OF TURPENTINE. LEUKOPENINS DEPRESSING THE PROLIFERATIVE ACTIVITY OF GRANULOCYTES AND LIBERATION OF MATURE GRANULOCYTES FROM THE BONE MARROW INTO THE PERIPHERAL BLOOD WERE REVEALED IN SOME OF THE SERUM SAMPLES. FACILITY:

PATOFIZIOLOGICHESKAYA LABORATORIYA TSENTRAL'NOGO INSTITUTA GEMATOLOGII I PERELIVANIYA KROVI MINISTERSTVA ZDRAVOOKHRANENIYA SSSR, MOSKVA.  
FACILITY: LABORATORIYA FIZIOLOGII VSESOUYUZNOGO NAUCHNO  
ISSLEDOVATEL'SKOGO INSTITUTA KONEVOOSTVA, MOSCOW.

UNCLASSIFIED



2

USSR

UDC 5.35.215.1

BASMAN, A. R., GERASTMOV, A. B., DOLIDZE, N. D., ~~KASHCHENKO, N. G.~~,  
KONOVALENKO, B. M., SHILLO, A. G.

"Concerning 'Photosensitive' Defects in Ge Irradiated at  $T = 77^{\circ} \text{K}$ "

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics of Nonmetallic Crystals -- Collection of Works), Vol 3, Part 1, Kiev, "Nauk. dumka," 1971, pp 210-216 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B236)

Translation: Photo-sensitive defects in Ge were studied, which form during irradiation of crystals by electrons at  $77^{\circ}\text{K}$ . If after annealing, the irradiated crystals are illuminated by white light, then the concentration of holes increases and remains constant after cessation of the illumination. N-type specimens doped with Sb and As, which changes the type of conductivity as a result of irradiation, and also p-type specimens doped with Ga were investigated. It is assumed that the effect of the action of light on the concentration of holes is the result of a change of the structure of the defects during heating and illumination. 3 ill. 6 ref. I. V.

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- 114 -

UDC 621.382

2

USSR

BASAN, A.R., GERASIMOV, A.B., DOLIDZE, N.D., KAMNIDZE, N.S., KONOVALENKO, B.M.,  
SHILLO, A.G.

"Isothermic Annealing Of Radiation Defects In Ge Irradiated By Fast Electrons  
At 77° K"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic  
Crystals--Collection Of Works), Vol 5, Part 1, Kiev, "Nauk.dumka," 1971, pp  
207-210 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract  
No 10E404)

Translation: The results are presented of an investigation of the processes of  
isothermic annealing of Ge at certain stages of reinsertion of the initial con-  
centration of current carriers. It is shown, for example, that at the stage of  
abrupt reinsertion of the concentration of electrons during annealing of speci-  
mens with a resistivity of 1--10 ohm. cm., doped with antimony, after irradiation  
by fast electrons, a complex process of change of the complexes of defects takes  
place. For the process of reinsertion of the concentration at  $T = 77^{\circ} \text{C}$  an  
activation energy of 1.1 plus or minus 0.1 ev is obtained and for the process  
of forming a level, 1.7 plus or minus 0.2. During annealing after irradiation  
at a  $240^{\circ} \text{C}$  temperature on p-type specimens with a resistivity of 5 ohm.cm, the  
activation energy equals 0.95 plus or minus 0.1 ev at the stage of reinsertion  
of holes. Here a simple bimolecular process takes place. 4 ref. 1.M.

1/1

USSR

UDC 537.311.33:546.289

GERASIMOV, A.B., DOLIDZE, N.D., ~~Kakhidze~~, N.G., KONOVALENKO, B.M.

"Kinetics Of Forming Radiative Defects Which Are Produced In Germanium By Gamma-Rays At A Temperature of 77°K"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals--Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 112-115 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1825)

Translation: Specimens were used for measurement with the initial concentration of the chemical impurity  $(Sb)N_d = (2.0 - 2.5) \times 10^{12} \text{ cm}^{-3}$  irradiated by integrated fluxes of gamma quanta. The spectra of the impurity photoconductivity were taken after a number of isochronous annealings. It was discovered that the low-temperature irradiation of n-type Ge leads to the appearance of a complex spectrum of energy levels located in the middle of the forbidden zone, and which as the result of irradiation at 77° K forms a great number of different types of defects, the majority of which are connected in complexes. 2 ill. 1 ref. Summary.

1/1

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USSR

UDC 681.3

TUTYATIN, V. G., KAKHICHAROV, T. K.

"The Algebra of States and Events. Applications to Technical Problems"

Sistemotekhnika. Vyp. 3 [Systems Engineering, No 3 -- Collection of Works], Kiev, 1970, pp 57-71, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V576 by O. Belkin).

Translation: The possibility is noted of using the algebra of states and events both for synthesis of discrete logic systems, and for continuous systems. In the latter case, the moment of arrival of conditions must be taken as the moments at which equilibrium is established. Selection of the equilibrium state each time is unambiguously determined by the state in which the system was located at the moment of disruption of equilibrium. This work makes an attempt to synthesis a logic circuit for a distributor, providing for nonlinear control.

K  
Radiobiology

UDC: 577:391.577:1

USSR

KHRYPCHANKA, I.P., KAKHNYUK, V.I., Belorussian State University imeni V.I. Lenin

"Cholinesterase Activity of Subcellular Fractions of White Rat Cerebrum During X-Ray Irradiation Depending Upon the Functional State of the Hypophysis-Adrenal System"

Minsk, Izvestiya Akademii Nauk BSSR, No 2, 1970, pp 90-93

Abstract: Mechanisms of adaptation to ionizing radiation were studied in four groups of white rats. Group one was the control group, two was irradiated with a single dose of 40 r., group three was surgically adrenalectomized (bilaterally) and subsequently irradiated with 40 r., and group four was pharmacologically adrenalectomized by administration of 3.5 mg/100 g of hydrocortisone acetate for 12 days. Compensation was fair. The animals were on a regular diet. Adrenalectomized animals were given 1% salt solution to compensate for ion exchange caused by lack of aldosterone. They were also given hydrocortisone in a dose of 2 mg/100 g and adrenalin in a dose of 0.02 mg/100 g, separately or together. Six days after disturbance in the hypophysis-adrenal system, and one day after irradiation, 10% homogenate containing nuclei and mitochondria was obtained from the subcellular fraction of the cerebral cortex. Subcellular fractions were studied for cholinesterase activity, which was expressed in terms of micrograms of acetylcholine per 100 mg of raw tissue after 1 hr. agitation at 37°C. In group two,

USSR

KERYPCHANKA, I.P., et al, Izvestiya Akademii Nauk BSSR, No 2, 1970, pp 90-93

cholinesterase activity in nuclei and supernatant fluid was equal, while in mitochondria it was high (0.90 micrograms). In some mitochondria fragments of nerve endings and synaptic membranes were found. In group three, the nuclei were unchanged, but cholinesterase activity was high in mitochondria and in all fractions of the supernatant fluid from the cerebral hemispheres. Following the introduction of hydrocortisone, cholinesterase activity is reduced by 28%, in the nuclear fraction increased by 41-45% in supernatant fluid, and almost normal in mitochondria. In group four, the results were similar to those in group three, except more pronounced, since there was a sharp lowering of cholinesterase in the nuclei and mitochondria.

2/2

USSR

UDC 621.791:669.245

YUSHCHENKO, K. A., KAKHOVSKIY, N. I., and STARUSHENKO, T. M., Institute of Electric Welding imeni Ye. O. Paton; IL'ICHEV, V. YA., Physicotechnical Institute of Low Temperatures, Academy of Sciences Ukrainian SSR; ZAKHAROV, A.I., Central Scientific Research Institute of Ferrous Metallurgy

"Weldability and Properties of Invar Weld Joints at Low Temperatures"

Kiev, Avtomaticheskaya Svarka, No 9, Sept 72, pp 39-42

Abstract: The purpose of this investigation was to develop the technology of welding Fe-Ni alloys (36N, 36NKh, and 39N) with a thickness up to 5 mm and to evaluate the weldability of Invar with a thickness up to 12 mm in order to obtain a strong and dense joint with the required mechanical and thermophysical properties in the 20 to -253°C interval. Chemical composition of the Fe-Ni alloys was (in %):

	C	Si	Mn	S	P	Ni	Cr
36N	0.032	0.23	0.43	0.009	0.008	36.1	----
36NKh	0.035	0.15	0.52	0.004	0.004	37.0	0.49
36N	0.034	0.19	0.50	0.008	0.009	39.9	----

Samples were submerged-arc welded with a nonconsumable tungsten electrode in argon, both with filler wire and without it, with AN-26 and AnF-5 fluxes.

1/2

YUSHECHENKO, K.A., et al., Avtomaticheskaya Svarka, No 9, Sep 72, pp 39-42

Low-temperature studies of the weld joints were carried out at the physicochemical Institute of Low Temperatures, Academy of Sciences Ukrainian SSR, the Central Scientific Research Institute of Ferrous Metallurgy, and the Institute of Electric Welding. Analysis of the mechanical and thermophysical properties of weld joints at low temperatures where 36NGT, 36NGTCe, and 36NGCe filler wires were used showed that alloying with Ti and Mn produces a dense joint where the alloy strength is equal to that of the base metal of the seam and possesses high impact strength and ductility at  $-253^{\circ}\text{C}$ . Experimental studies of welded Invar (6 and 12 mm thick) showed that the use of 36NGT filler wire yields seams with defects (hot cracks). 6 figures, 2 tables, 8 bibliographic references.

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USSR

UDC 621.791.011:669.15-194

KAKHOVSKIY, N. I., FARTUSHNYY, V. G., and SAVCHENKO, V. S., Institute of Electric Welding imeni YE. O. Paton, Academy of Science UkrSSR

"Effect of Silicon on the Weldability, Structure, and Properties of Austenitic Steel Weld Joints"

Kiev, Avtomaticheskaya Svarka, No 4, Apr 71, pp 9-13

Abstract: Weld seams of Cr-Ni steels containing 4-6% Si and up to 0.8% Nb were studied (grades OKh23N18, OKh20N20S2, OKh20N20S4, OKh20N20S5, and OKh20N29S6). Corrosion tests of steels with 4-6% Si with or without Nb exhibited selective corrosion of the heat-affected zone when exposed to 65% boiling nitric acid. Corrosion was much greater in those welds made in steels containing Si and Nb. Metallographic analysis showed that a second phase is precipitated from the austenite solid solution grain boundaries in the form of fine substrates almost encircling the entire grain. Tensile and yield strengths increase slightly with increased Si content while reduction in area and elongation tend to drop off and impact strength drops off sharply with increased Si content. Seven figures, 3 tables, 7 bibliographic references.

1/1

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USSR

UDC 539.4.42

KAKHOVSKIY, N. I., YUSHCHENKO, K. A., MON'KO, G. G., SOLOKHA, A. M., and  
KVASNEVSKIY, O. G., Kiev, Institute of Electric Welding imeni Ye. O. Paton,  
Academy of Sciences UkrSSR

"Fundamentals of Alloying Steel and Weld Metal for Structures Operating  
Continuously at Low Temperatures"

Kiev, Problemy Prochnosti, No 8, Aug 70, pp 119-125

Abstract: Results are presented of a series of investigations for determining the mechanical properties of Cr-Ni-N and Cr-Ni-Mn-N steels for the purpose of establishing optimal quantities of alloying elements for obtaining austenite-stable steels under conditions of long-duration operation at low temperatures (to  $-100^{\circ}\text{C}$ ). The results show that a 15% Ni content in Cr-Ni-N and Cr-Ni-Mn-N steels is sufficient for complete austenite stability. The effect of alloying metals on the mechanical properties of steels and weld metals is shown in graphs.

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- 44 -

USSR

UDC 539.411.5

YUSHCHENKO, K. A., KAKHOVSKIY, N. I., KVASNEVSKIY, O. G.,  
MONKO, G. G., SOLOKHA, A. M., (Kiev), Institute of Electric  
Welding imeni Ye. O. Paton

"The Influence of Second-Phase Separations on the Enbrittlement  
of High-Alloy Austenitic Steels at Low Temperatures"

Kiev, Problemy Prochnosti, No 8, 1970, pp 99-103

Abstract: In the article are presented results of research  
carried out with the aim of ascertaining the influence of  
nitrogen alloying upon the tendency of some austenitic steels,  
used in cryogenics, toward brittle destruction. 7 figures,  
1 table, 7 bibliographic entries.

1/1

- 73 -

Acc. Nr.:

AP0046763

Ref. Code: U80125

USSR

UDC 621.791.756:669.15-194

KAKHOVSKIY, N. I., FARTUSHIYY, V. G., DEM'YANENKO, G. P., ZAKHAROV, L. S.,  
LIPODAYEV, V. N., KAKHOVSKIY, YU. N., BRUSENTOVA, V. M., KOTOV, V. V.

"Welding of Chrome-nickel-molybdenum Single-Phase Austenitic Steel"

Kiev, Avtomaticheskaya Svarka (Automatic Welding), No 1, 1970, pp 39-43  
(from Avtomaticheskaya Svarka, No 1, 1970, p 80)

Translation: This article contains a study of the effect of manganese and nitrogen on crack resistance of purely austenitic welds. Chrome-nickel-manganese-molybdenum wire with nitrogen EP690 and ANV-17 electrodes for welding OKh17N16M2T, 00Kh17N16M3B and 000Kh16N15M3 steels have been developed. These developments insure uniform strength, uniform corrosion resistance of the joints made of these steels and sufficiently high plasticity and viscosity of the weld metal. There are 4 tables, 1 illustration and a bibliography with 15 entries..

Reel/Frame  
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Acc. Nr.: AP0046763

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Ref. Code: UPO/25

USSR

UDC 621.791.756:669.15-194

KAKHOVSKIY, N. I., FARTUSHNIYY, V. G., DEM'YANENKO, G. P., ZAKHAROV, I. S.,  
LIPODAYEV, V. N., KAKHOVSKIY, YU. N., BRUSENTSOVA, V. N., KOTOV, V. V.

"Welding of Chrome-nickel-molybdenum Single-Phase Austenitic Steel"

Kiev, Avtomaticheskaya Svarka (Automatic Welding), No 1, 1970, pp 39-43  
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Translation: This article contains a study of the effect of manganese and nitrogen on crack resistance of purely austenitic welds. Chrome-nickel-manganese-molybdenum wire with nitrogen EP690 and ANV-17 electrodes for welding OKh17N16M2T, OKh17N16M3B and OKh16N15M3 steels have been developed. These developments insure uniform strength, uniform corrosion resistance of the joints made of these steels and sufficiently high plasticity and viscosity of the weld metal. There are 4 tables, 1 illustration and a bibliography with 15 entries..

1/1

Reel/Frame  
19790067

di 18

Crystals and Semiconductors

USSR

ABDULLAYEV, G. B., KULIYEV, A. Z., AGAYEV, A. I., ABDULLAYEV, E. A.,  
KAKHRAMANOV, R. Sh., Institute of Physics, Academy of Sciences of the  
Azerbaijani SSR

"N-Type Lead Sulfide Strain-Sensing Semiconductor Resistors"

Baku, IAN Azerbaydzhanskey SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, Fizika i Astronomiya, No 1, 1971, pp 39-44

Abstract: The authors study specimens of  $PbCl_2+Pb$ -doped lead sulfide strain-sensing resistors with electron concentrations of  $5.3 \cdot 10^{18}/cc$ . This dopant gives specimens with a high electron mobility. Contacts were made by the galvanic method, thermal welding, and vaporization. The output of the GZ-31 sonic generator was used as the source of supply. The signal frequency was 2 kHz. A study was made of the effect of strain on the current-voltage characteristic of a specimen. It was found that the slope of this curve is a linear function of strain in the range of  $2 \cdot 10^{-1}$  to  $5 \cdot 10^{-4}$  relative units. Deformation curves show that the change in relative resistance is practically linear and depends on the current flowing through

1/2

USSR

ABDULLAYEV, G. B. et al., IAN AzerbSSR, Seriya Fiz.-Tekhn. i Mat. Nauk, Fiz. i Astron., No 1, 1971, pp 39-44

the specimen. In the case of tensile strain, the deformation curve at 20 ma has two linear segments with different slopes: the first at relative deformations below  $1.2 \cdot 10^{-4}$  relative unit, and the second (with greater slope) from  $1.2 \cdot 10^{-4}$  to  $2.2 \cdot 10^{-4}$  relative units. Strain sensitivity in the range from  $5 \cdot 10^{-5}$  to  $2 \cdot 10^{-4}$  unit of relative deformation is 1.5 times as great for tension as for compression. Experiments with P-type lead sulfide strain-sensitive resistors showed that specimens of this type made by powder metallurgy methods have low resistance to mechanical and thermal loading. Chlorine-doped pressed polycrystalline specimens of N-PbS are thermally stable at temperatures up to 1000°K. Specimens tested under various dynamic conditions withstood  $2 \cdot 10^6$  cycles. Strain gauges based on lead sulfide resistors can be used to measure relative deformations of as little as  $10^{-5}$  relative unit. Three figures, bibliography of seven titles.

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USSR

UDC:[537.226+537.311.33]:[537+535]

KULIYEV, A. Z., OKHOTIN, A. S., ASADOV, D. A., and KAKHRAMANOV, K. Sh.

"Effect of Deformation on the Thermoelectrical Characteristics of  $\text{Bi}_2\text{Te}_3\text{-Bi}_2\text{Se}_3$ "

V sb. Teor. fiz. svoystva tver. tel (Thermophysical Characteristics of Solids--collection of works) Kiev, Nauk. dumka, 1971, pp 30-33 (from RZh-Fizika, No. 11, 1971, Abstract No. 11B1075)

Translation: The effect of external, single-sided pressure (up to  $250 \text{ kg/cm}^2$ ) on the electrical conductivity ( $\sigma$ ), the thermal emf coefficient ( $\alpha$ ), and the thermal conductivity ( $\kappa$ ) of a solid solution of n-type  $80\% \text{ Bi}_2\text{Te}_3\text{-}20\% \text{ Bi}_2\text{Se}_3$  are investigated in the temperature interval of  $300\text{-}500^\circ \text{ K}$ . It is established that at  $300^\circ \text{ K}$ , with an increase in load from 0 to  $100 \text{ kg/cm}^2$ ,  $\sigma$  increases linearly to more than double its value. With elevations in temperature, this type of sharp increase in  $\sigma$  is not observed. The change in  $\alpha$  did not exceed 10%. An increase in  $\kappa$  is also observed with increasing deformation, reaching a maximum at  $100 \text{ kg/cm}^2$ . The reduction of  $\sigma$  and  $\kappa$  at pressures  $>100 \text{ kg/cm}^2$  is explained by electron and phonon dispersion in the defects formed. G. I. Makovetskiy.  
1/1

- 111 -



Acc. Nr:

101365

KAKHRAMANOV

Ref. Code:

Abstracting Service:

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,  
Derwent, 3-70 246226

ELECTROMAGNETIC VALVE WITH PILOT CONTROL

consists of housing 1 with inlet 2 and outlet

3 pipes in the form of bushes with apertures, and a resilient tube 4 over the bushes to form an annular chamber with the housing. In order to provide greater reliability, the annular chamber v is connected by channel k to pilot valve 5 so that when electromagnet 6 is switched off the pilot valve chamber is connected to inlet 2, and when the electromagnet is switched on it is connected to the atmosphere. In the closed position pilot valve 5 is pressed by spring 7 against the upper seat, and tube 4 closes slots g and d.

When pressure is fed to chamber a, gas passes into chamber v through channels l and m. When pilot valve 5 electromagnet is switched on, the valve closes the lower seat and opens the upper one, allowing pressure from chamber v to escape into the atmosphere. The difference in pressures between chambers a and v then causes tube 4 to expand and allow gas to pass from chamber a to b, opening the valve.

24.7.67. as 1176326/25-8, BAGIEV, A.H. KAKHRAMANOV,

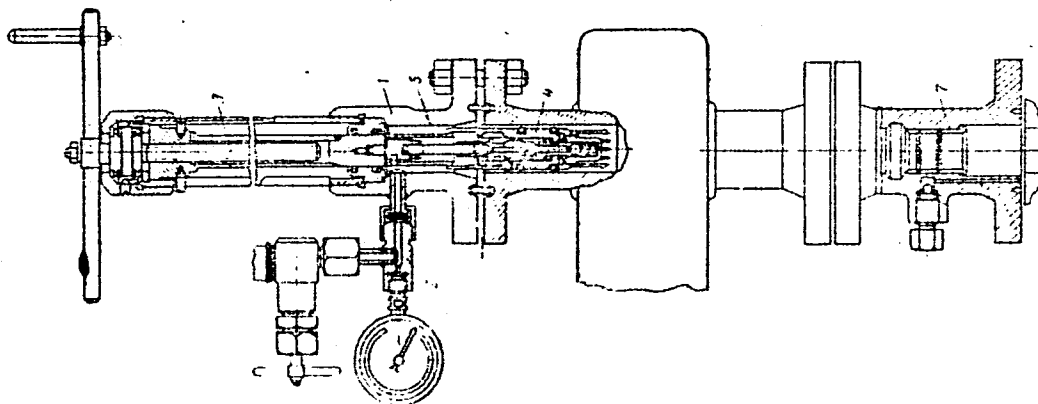
H.T. (30.10.69) Bul. 20/11.6.69. Class 47g, Int. Cl.

F 16k.

REEL/FRAME

19851187

AA0101365



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19851188

USSR

UDC 616.988.73-08-084(479.24)

IMAMALIYEVA, G. M., ABUSHEV, F. A., GEZALOVA, F. A., and KAKHRAMANOV, T. B.,  
NIIVMIG imeni G. M. Musabektov and Chair of Infectious Diseases, Azerbaydzhan  
State Medical Institute imeni N. Narimanov

"The Clinico-Epidemiological Characteristics of Ornithosis in Baku"

Baku, Azerbaydzhanskiy Meditsinskiy Zhurnal, Vol 50, No 3, Mar 73, pp 54-58

Abstract: Serological tests carried out on 3824 patients with various diseases in Baku during 1966-71 showed that 342 of them (8.99%) had been infected with ornithosis. Similar tests on 336 healthy persons (blood donors) indicated that 5% had been infected with ornithosis. During the period in question, 51 cases of ornithosis were diagnosed among patients treated at hospitals and clinics. Twenty six of the ornithosis patients were men and 25 women. Of the 51 patients, 21 kept pigeons or had some sort of contact with them; 3 kept in their rooms fancy birds such as parrots, canaries, and goldfinches; and 17 had chickens, geese, and ducks. In 10 cases the source of infection could not be established. Of pigeons caught in Baku, 21.4% were infected with ornithosis. Of the ornithosis patients, 62.7% were 30-50 years old, 29.4% younger than 30 years, and 7.8% older than 50 years. As distinguished from Leningrad and Moscow, where most cases of ornithosis are due to infection of persons of post-retirement age from pigeons in squares and parks, the majority of infections in Baku

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USSR

IMAMALIYEVA, G. M., et al., Azerbaydzhanskiy Meditsinskiy Zhurnal, Vol 50, No 3, Mar 73, pp 54-58

was among persons of a younger age and was apparently associated with the keeping of pigeons at home. Of the 51 patients 27 had the disease in a mild form, 18 in a moderately severe form, and 6 in an acute form. In cases in which the disease was initially mild, worsening of the health of the patients took place 2-3 months later; the patients had occasional fever, myalgia, insomnia, pain in the joints, and vegetative disturbances at the time of recurrence of the disease. Of 35 cases the histories of which are summarized, all were incorrectly diagnosed in the beginning, although sufficient information on ornithosis had been given to physicians by the medical authorities in Azerbaydhan. In one case failure to diagnose the disease correctly was responsible for inadequate treatment and the death of the patient. Twenty one of the 35 patients developed pneumonia of various types and 4 sharpening of the lung outline. Some ornithosis patients developed considerable functional and organic changes in the nervous system. Cases of this type, in which the background of infection with ornithosis had not been recognized, were found by the authors in neurological departments of some hospitals.

2/2

- 14 -

USSR

UDC: 772.99

KAKICHASHVILI, Sh. D., DZHUGELI, B. P., Institute of Cybernetics, Academy of Sciences of the Georgian SSR

"Circular Holographic Recording in Opposed Beams"

Moscow, Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii, Vol 18, No 3, May/Jun 73, pp 179-181

Abstract: The paper describes a system of holography in which the film takes the form of a cylinder surrounding the object, and the reference and object waves travel in opposite directions (reflection holography). The main advantage of this method is that it permits use of a more diffuse and less monochromatic light source in reconstruction of the wavefront. The reference beam is shaped into a conical wave which is then reflected from the inside surface of a cylindrical mirror from which it is sent to the object. A helium-neon laser was used in holography, and the STp-61 incandescent lamp was used in reconstructing the wavefront. Shrinkage of the emulsion is an important factor, especially since the image is curved. A formula is given for the limiting angular field of view. The authors thank A. V. Borin and N. S. Gafurova for supplying the high-resolution holographic film.

1/1

Materials

USSR

UDC 535.317.1

KAKICHASHVILI, SH. D., CHIKVAIDZE, D.V., DZHUGELI, B. P.

"Large-Sized Holograms On Film Photomaterial"

Tekhnika kino i televideniya, No 4, Apr 1972, pp 9-11

Abstract: A technique developed by the authors for obtaining and showing large-sized film 3-dimensional holograms is described. Flat (50 x 100 cm) and circular (19-cm high and 60-cm in diameter) holograms of 3-dimensional objects were obtained by means of a LG-75 He-Ne laser in a single-mode regime with the use of a two-beam scheme. Professor A. V. Borin and N. S. Gafurova submitted the high-quality holographic photomaterials. Professor B. K. Balavudze made it possible to conduct the experiments in the Division Of Gravimetry, Institute Of Geophysics, Academy Of Sciences, Georgian SSR. 4 fig. 6 ref.

1/1

USSR

KAKICHASHVILI, SH. D., Cybernetics Institute of the Georgian SSR Academy of Sciences, Tbilisi

"Holography of Raster Objects without a Reference Wave"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol XLII, No 3, 1972, pp 650-653

Abstract: The theoretical basis and experimental proof of the possibility of making a holographic recording without a reference wave for an object in the form of a two-dimensional periodic structure made up of identical elements of arbitrary nature are presented. The scheme used to record the regular raster transparent, the diffracting element of which had the form of a septatone portrait, is illustrated schematically. The spatial period of the raster used was 1.22 mm, and the total number of elements was 999. The positive hologram obtained gives a reproduction of the initial image, and the negative hologram gives the image inverse to it with respect to amplitude. Some magnified fragments of the images are presented. In order to eliminate phase distortions, during reconstruction the holograms were immersed in decalin -- a liquid similar, with respect to the index of refraction, to the photographic emulsion.

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USSR

UDC 681.325.54

CHAVCHANIDZE, V. V., KAKICHASHVILI, Sh. D., DZHAGAROV, Yu. A., CHIKVAIDZE, D. V., LESELIDZE, D. V., CHRAKADZE, M. I., TEVDORASHVILI, K. G., and LOBZHANIDZE, V. V.

"Optical Signal Adder"

USSR Author's Certificate No 269606, filed 27 Jan 69, published 28 Jul 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 71, Abstract No 6 B185 P)

Translation: An optical signal adder for signals given in the form of pictures of rectangular shape is introduced. The adder contains an optical interferometer. It is distinguished by the fact that in order to improve the light efficiency and insure addition with respect to any modulus, the expanding system for conversion of the light pictures to a quadratic matrix is located at its input, after which along the channels corresponding to the components there are a Dove prism and a system of rhombic prisms with sequentially decreasing height the number of which per unit is less than the summation modulus. At the output of the indicated channels there is an interference mixer followed by the compressing system.

1/1

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USSR

UDC: 621.374.33:681.325.65:621.383

~~KAKICHASVILI~~, Sh. D., DZHAGAROV, Yu. A., TEPLITSKIY, E. Sh., Institute of Cybernetics, Academy of Sciences of the Georgian SSR

"An Electro-Optical Device Which Utilizes Ultrasonic Traveling Waves"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 8, Mar 71, Author's Certificate No 296104, division G, filed 21 Jul 68, published 12 Feb 71, p 151

Translation: This Author's Certificate introduces an electro-optical device which utilizes an ultrasonic traveling wave. The device contains a liquid-filled vessel with an absorber applied to its wall. As a distinguishing feature of the patent, the device is designed for parallel logical processing of data blocks (e. g., performing the AND logic operation). The unit contains matrices of input sources of acoustic waves equipped with an acoustic focusing device.

1/1

1/2 037 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--ACHROMATIC RECONSTRUCTION OF HOLOGRAMS IN TRANSMITTED WHITE LIGHT  
-U-  
AUTHOR--KAKICHASHVILI, SH.D.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL PRIKLADNOI SPEKTROSKOPII, VOL. 12, MAR. 1970, P. 547-550  
DATE PUBLISHED----MAR70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--HOLOGRAM, HOLOGRAPHY, LASER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1989/1019 STEP NO--UR/0368/70/012/000/0547/0550  
CIRC ACCESSION NO--AP0107533  
UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0107533

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF HOLOGRAPHIC  
RECONSTRUCTION OF LASER HOLOGRAMS IN TRANSMITTED WHITE LIGHT, USING A  
ZONAL PLATE WHICH IS A HOLOGRAM OF A POINT OBJECT AS AN EXAMPLE.  
EXPRESSIONS ARE DERIVED WHICH RELATE THE GEOMETRICAL HOLOGRAPHING  
PARAMETERS AND THE OPTICAL PARAMETERS OF THE OBSERVATION SYSTEM TO THE  
CHOSEN CRITERION OF RESIDUAL CHROMATISM OF THE HOLOGRAM.

UNCLASSIFIED

1/2 032 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--HOLOGRAPHY WITHOUT A REFERENCE WAVE -U-  
AUTHOR--KAKICHASHVILI, SH.D.  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIIA NAUK Gruzinskoi SSR, SOOBShCHENIIA, VOL. 57, MAR. 1970,  
P. 569-572  
DATE PUBLISHED--MAR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HOLOGRAPHY, OPTIC IMAGE, WAVE MECHANICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/1276

STEP NG--UR/0251/70/057/000/0569/0572

CIRC ACCESSION NO--AP0124927

UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124927

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF A THEORETICAL BASIS FOR TWO APPROACHES TO THE STUDY OF WAVE PROCESSES WITHOUT USING REFERENCE WAVES. EXPRESSIONS DESCRIBING THE IMAGE CHARACTERISTICS OF SPHERICAL WAVES PRODUCED BY A POINT SOURCE ARE DERIVED AND ANALYZED. THE PROCESS OF HOLOGRAPHIC WAVE REPRODUCTION IS DISCUSSED ON THE BASIS OF THESE EQUATIONS. FACILITY: AKADEMIIA NAUK GRUZINSKUI SSR, INSTITUT KIBERNETIKI, TIFLIS, GEORGIAN SSR.

UNCLASSIFIED

USSR

UDC 517.948.32:513.88

KAKICHEV, V. A., and KOVALENKO, N. V., Rostov State University

"On the Theory of 2-Dimensional Integral Equations with Particular Integrals"

Kiev, Ukrainskiy Matematicheskiy Zhurnal, Vol 25, No 3, 1973, pp 302 - 312

Abstract: In the quantum theory of fields there are integral operators with  $\Delta$  functions in the roots of the first and second terms. Typical physical situations leading to such operators are described by K. O. Friedrichs in "Perturbations of the Spectrum of Operators in Hilbert Space", Mir Press, Moscow, 1969. Integral equations of a related type are also encountered in the design of dams by the arc and cantilever method. There have been several previous investigations of equations of this type, referred to in the bibliography.

This article is concerned with an equation

$$T_{\lambda, \mu} \equiv \varphi - \lambda k_1 \varphi - \mu k_2 \varphi \equiv \varphi(x, y) - \lambda \int_a^b k_1(x, \xi) \varphi(\xi, y) d\xi - \mu \int_c^d k_2(y, \eta) \varphi(x, \eta) d\eta = f(x, y)$$

where  $\lambda$  and  $\mu$  are numerical parameters;  $k_1$ ,  $k_2$ , and  $f$  are given values;  $\varphi$  is the desired function of points in a region  $D = \{(x, y): a \leq x \leq b, c \leq y \leq d\} \subset E_2$ .

1/2

Ukrainian SSR

KAKICHEV, V. A., et al., Kiev, Ukrainskiy Matematicheskiy Zhurnal, Vol 25, No 3,  
pp 302 - 312

The equation is studied for all possible values of  $\lambda$  and  $\mu$ , assuming that all the given functions belong to  $C$  or  $L_2$  and that the roots  $k_1$  and  $k_2$  are the sums of subfunctions, linearly independent over the corresponding interval.

The structure of the general solution of the homogeneous equation is described. Necessary and sufficient conditions of solvability for the nonhomogeneous equation are given, and its Housefod normal solvability is demonstrated.

2/2

- 2 -

Nitrogen Compounds

USSR

UDC 632.95

SHIBANOV, G. N., KAKLYUGIN, V. YA., North Caucasus Scientific Research  
Institute of Phytopathology

"A Method of Making 2,3,5-Trichloro- or 2,3,5,6-Tetrachloro-4-aminopyridines"

USSR Author's Certificate No 348560, Div C, filed 2 Feb 70, published 8 Sep  
72 (from RZh-Khimiya, No 14, 25 Jul 73, Abstract No 14N621 by T. A. Belyayeva)

Translation: A method is proposed for making 2,3,5-Cl<sub>3</sub>-4-NH<sub>2</sub>-pyridine (I)  
or 2,3,5,6-Cl<sub>4</sub>-4-NH<sub>2</sub>-pyridine (II) by reacting 2,3,4,5-Cl<sub>4</sub>-pyridine or  
2,3,4,5,6-Cl<sub>5</sub>-pyridine (III) with gaseous NH<sub>3</sub> in dimethylsulfoxyl at 60-65°C.

Example. NH<sub>3</sub> is bubbled through a mixture of 5 g of III in 6 ml of dimethyl-  
sulfoxyl at a rate of 80 ml/min at 60-65°C for 3 minutes, the reaction mass  
is cooled, poured into 15 ml of water, the precipitate is filtered out,  
washed with 10 ml of water and dried giving compound II with a yield of  
about 100%, melting point 222°C (alcohol). In a similar manner compound I  
is produced with a yield of 91% and a melting point of 143°C.

1/1



USSR

UDC 621.373.5

YAMSHCHIKOV, V. S., NOSEV, V. N., KAKORIN, B. M., Moscow "Order of the Red Banner of Labor" Mining Institute

"A White Noise Generator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraboty, Tovarnyye Znaki, No 4, Feb 72, Author's Certificate No 326699, Division E, filed 28 May 70, published 19 Jan 72, p 207

Translation: This Author's Certificate introduces a white noise generator which contains a noise source based on a stabilatron, a voltage stabilizer, a voltage divider and a transistor. As a distinguishing feature of the patent, the output impedance is reduced by connecting the input of the stabilatron through a resistor to the emitter of the transistor, and through a capacitor to the transistor base, which is connected to the voltage stabilizer and to the collector of the transistor through the voltage divider.

1/1

USSR

UDC: 621.382.3

KAKOVKIN, V. V., ZAYTSEV, B. D., and SHVEDOV, Ye. Ye.

"Measuring Infrared Noise of MOS Transistors by the Frequency Transformation Method"

Kiev, Izvestiya VUZ--Radioelektronika, Vol 14, No 1, 1971, pp 67-71

Abstract: An important characteristic of MOS transistor amplifiers is the inherent noise which limits the sensitivity of the device and, most typical of the noise in the infrared spectrum, causes drift of the zero point. Discussing the various methods of measuring the noise spectral density, the authors conclude that the most promising is the frequency transformation method, which involves the use of a tape recorder. According to this method, the noise voltages are recorded at low speed and are played back at a speed providing the required change in time scale for investigating the noise spectral density with ordinary equipment. This article gives the results of experiments performed in the measurement of infrared noise in the 0.005-1 Hz range, using the MAG-1 and MAG-2 recorders. The recordings were made at speeds of 0.14, 0.07, and 0.035 mm/s, and the playbacks at 381 and 762 mm/s. The distortions in the spectra, computed theoretically for this process, were experimentally checked. For their experimental specimens, the authors used MOS transistors with induced p-channel and an insulating SiO<sub>2</sub> film 0.17  $\mu$  thick. Curves are plotted for the noise factor as a function of the frequency.

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1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--PASSIVATION AND DEPASSIVATION OF GOLD IN CYANIDE SOLUTIONS -U-  
AUTHOR--(02)-KAKOVSKIY, I.A., LEBEDEV, A.N.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., TSVET. MET. 1970, 13(1), 56-9  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--METAL PASSIVATION, GOLD, CYANIDE, SOLUTION CONCENTRATION,  
OXYGEN, SURFACE ACTIVE AGENT  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/0840 STEP NO--UR/0149/70/013/001/0056/0059  
CIRC ACCESSION NO--AT0132930  
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132930

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AU PASSIVATION AND DEPASSIVATION  
DURING DISSOLN. IN CYANIDE SOLNS. ARE DEFINED BY THE CONCN. OF O IN  
SOLN. AND BY SURFACE ACTIVE REAGENTS. FACILITY: URAL. POLITEKH.  
INST., SVERDLOVSK, USSR.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EFFECT OF COLCEMID ON THE CHROMOSOMES OF HUMAN CELLS IN VITRO -U-  
AUTHOR--(02)-KAKPAKOVA, YE.S., LEVINA, N.V.  
COUNTRY OF INFO--USSR  
SOURCE--TSITOLOGIYA 1970, 12(3), 382-6  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--CELL CULTURE, CHROMOSOME, MITOSIS, HAMSTER  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/0454 STEP NO--UR/9053/70/012/003/0382/0386  
CIRC ACCESSION NO--AP0117690  
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0117690

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COLCEMID AT 0.01-0.03 MU G-ML  
CULTIVATED FOR 48-72 HR ON DIPLOID AND ANEUPLOID HUMAN CELLS IN VITRO  
COMPLETELY OR PARTIALLY PULVERIZED CHROMOSOMAL MATERIAL FROM THE  
POLYPLOID CELLS. THERE WAS NO DIFFERENTIAL INHIBITION OF MITOTIC  
SPIRALIZATION IN THE INDIVIDUAL POLYPLOID HUMAN CELLS SUCH AS IS KNOWN  
IN CHINESE HAMSTER CELLS. FACILITY: LAB. CYTOGENET., INST. EXP.  
CLIN. ONCOL., MOSCOW, USSR.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--REMOTE RESULTS OF SURGICAL TREATMENT OF INTERVENTRICULAR SEPTAL  
DEFECTS -U-  
AUTHOR--(03)-SOLOVYEV, G.M., BURAKOVSKIY, V.R., KAKULINA, N.M.  
COUNTRY OF INFO--USSR  
SOURCE--KARDIOLOGIYA 10(1): 44-52, 1970  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HEART SURGERY, RADIOGRAPHY, ELECTROCARDIOGRAPHY,  
PHONOCARDIOGRAPHY, HEMODYNAMICS, HYPERTENSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0543

STEP NO--UR/0495/70/010/001/0044/0052

CIRC ACCESSION NO--AP0131171

UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131171

ABSTRACT/EXTRACT--(U) CP-0- ABSTRACT. PATIENTS (110) AT PERIODS FROM 1-7 YR AFTER THE OPERATION FOR ISOLATED INTERVENTRICULAR SEPTAL DEFECT WERE EXAMINED. APART FROM RUENTGENOLOGICAL ECG AND PHONOCARDIOGRAPHIC INVESTIGATIONS, 47 PATIENTS WERE SUBJECTED TO CATHETERIZATION OF RIGHT REGIONS OF THE HEART. IN 85.4PERCENT OF PATIENTS THERE WERE GOOD RESULTS WITH PRACTICAL RECOVERY IN MOST CASES. UNFAVORABLE RESULTS WERE DUE TO OPERATIVE AND POSTOPERATIVE COMPLICATIONS: COMPLETE TRANSVERSE BLOCK, RECANALIZATION OF THE DEFECT, AND TRAUMATIC AORTIC INCOMPETENCE. NORMALIZATION OF THE HEMODYNAMICS WAS ALSO OBSERVED IN PATIENTS WITH HIGH PULMONARY HYPERTENSION IN ITS HYPERKINETIC FROM. A COMPARATIVE EVALUATION OF THE REMOTE RESULTS OF OPERATIONS PERFORMED WITH DIFFERENT APPROACHES DEMONSTRATES THAT EACH APPROACH HAS ITS RELATIVE MERITS AND SHORTCOMINGS. THE TRANSATRIAL APPROACH IS ESPECIALLY VALUABLE WHEN OPERATING ON PATIENTS WITH HIGH PULMONARY HYPERTENSION.  
FACILITY: INST. CARDIOVASC. SURG., ACADE. MED. SCI. USSR, MOSCOW, USSR.

UNCLASSIFIED



USSR

UDC 612.766.1-06:613.24

KAKURIN, L. I., PURAKHIN, YU. N., GEORGYEVSKIY, V. S., KATKOVSKIY, B. S.,  
VYSOTSKIY, V. G., CHEREPAKHIN, M. A., USHAKOV, A. S., LARICHEVA, K. A.,  
PETUKHOV, B. N., IVANOV, P. P., MACHINSKIY, G. V., MIKHAYLOV, V. M., POMETOV,  
YU. D., and SMIRNOVA, G. I.

"Locomotor Activity of Man Kept on a Reduced Food Ration"

Moscow, Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

Abstract: The combination of drastic limitation in locomotor activity with reduction to a low-calorie diet (down to basal metabolism) was studied in six healthy men 24-35 years of age who were confined to bed for a number of days under conditions of hypokinesia. Pronounced changes were observed in the functions of the cardiovascular, respiratory, nervous, and muscular systems of the body. Tabular data were collected on physiological tremor of closed yes, maximum physical work fitness, muscle tone dynamics, and the cardiovascular system in the orthostatic position. Asthenia of the nervous system and a slowing down of the biopotentials in the cerebral cortex were observed. Likewise, it was noted that hypokinesia caused disturbances in body coordination and statics. The pulse rate increased and the arterial pulse pressure was 1/2

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KAKURIN, L. I., Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

reduced in persons subjected to the orthostatic test. Three persons reached a state of near collapse. These changes were attributed to a significant reduction in the compensating actions of the blood circulation. It was found that after about 10 days, the observed changes gradually decreased in the test subjects. This regression was largely of a functional character and was linked to the "detraining" of the various systems of the body. The authors believe that the severity of the changes in the body functions is directly proportional to the degree of hyperkinesia to which the tested persons were subjected. It is proposed that maintenance of homeostasis requires a certain level of motor activity even with a low-calorie ration.

2/2

1/3 042 UNCLASSIFIED  
TITLE--COMPENSATION FOR WEIGHTLESSNESS -U

PROCESSING DATE--09OCT70

AUTHOR--KAKURIN, L.

COUNTRY OF INFO--USSR

SOURCE--FBIS DAILY REPORT, SOVIET UNION, 16 JUNE 1970, VOL III NR 116, PP  
D 2-D 3  
DATE PUBLISHED--16JUN70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--WEIGHTLESSNESS, MANNED SPACECRAFT/(U)SOYUZ 9 MANNED SPACECRAFT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1990/1616

STEP NO--US/0000/70/003/116/0002/0003

CIRC ACCESSION NO--AP0109626

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--9906070

2/3 042

CIRC ACCESSION NO--AP0109026

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. MOSCOW, JUNE 16, TASS SCIENTISTS  
ADVANCED THE DOCTRINE WHICH DETERMINES WAYS AND METHODS OF STUDYING  
PHYSIOLOGICAL PROCESSES IN WEIGHTLESSNESS AND CREATING THE MEANS THAT  
WILL ULTIMATELY ENABLE THE MAN TO RESIST ADVERSE FACTORS OF ENVIRONMENT  
DURING LENGTHY FLIGHTS, DOCTOR OF MEDICAL SCIENCES L. KAKURIN WRITES IN  
PRAVDA. THE FLIGHT OF THE SPACESHIP "SOYUZ 9" MARKS A STAGE ON THE ROAD  
TO THIS GOAL. THE SCIENTIST WRITES THAT WEIGHTLESSNESS IS ONE OF THE  
CONDITIONS OF SPACE FLIGHT THAT HAS THE MOST UNFAVORABLE EFFECTS ON THE  
ORGANISM OF THE MAN. SO, WEIGHTLESSNESS MUST BE GIVEN THE GREATEST  
ATTENTION BY SCIENTISTS. WEIGHTLESSNESS CAUSES READJUSTMENT OF MANY  
ORGANS AND PHYSIOLOGICAL SYSTEMS. DURING WEIGHTLESSNESS, THE WEIGHT OF  
COSMONAUTS LOWER BECAUSE OF THE LOSS OF LIQUID CONTAINED IN TISSUES AND  
THE BLOOD. SODIUM AND OTHER CHEMICAL ELEMENTS NECESSARY FOR THE  
ORGANISM ARE LOST WITH THE LIQUID. BUT PHYSICIANS DO NOW REGARD THIS  
UNUSUAL STATE OF ORGANISM AS A DISEASE, DR. KAKURIN WRITES. AS THESE  
ADVERSE CHANGES ARE OVERCOME QUICKLY WITHOUT MEDICAL TREATMENT. THE  
GREAT THIRST AND LARGE CONSUMPTION LIQUID WITHIN A DAY OR TWO AFTER THE  
ENDING OF THE FLIGHT ENABLE THE COSMONAUTS TO REGAIN THEIR FORMER  
WEIGHT. THE CORRELATION OF CHEMICAL ELEMENTS IN THE ORGANISM BECOMES  
OPTIMAL, TOO. IN SEVERAL HOURS, THE ORGANISM SHOWS STEADY COORDINATION  
IN ALL KINDS OF MOVEMENTS AND SHOWS GOOD STRENGTH AND STAMINA.

UNCLASSIFIED

3/3 042

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0109626

ABSTRACT/EXTRACT--SCIENTIST NOW TRY TO ESTABLISH WHETHER A LONG STAY IN WEIGHTLESSNESS CAN CHANGE THE FUNCTIONAL STATE OF THE ORGANISM SO GREATLY THAT THE RETURN TO THE CONDITIONS OF THE GRAVITATIONAL FIELD NORMAL FOR THE ORGANISM WOULD TAX IT EXCESSIVELY. SPECIALISTS ALSO STRIVE TO FIND OUT WHETHER THERE WILL BE A NEED FOR COMPENSATION OF THE STATE OF WEIGHTLESSNESS AND BY WHAT MEANS THIS CAN BE ACHIEVED. FOR OBTAINING THE CORRECT ANSWER, DOCTORS AND BIOLOGISTS NEED MANY OBSERVATIONS TO ESTABLISH THE GOVERNING DEPENDENCIES. THE SCIENTIST POINTS OUT THAT THE FLIGHTS OF COSMONAUTS IN THE SPACESHIPS "SOYUZ 6", "SOYUZ 7 AND "SOYUZ 8" YIELDED EXTREMELY VALUABLE INFORMATION. THROUGH THESE FLIGHTS, THE RESEARCHERS OBTAINED VERY RELIABLE RESULTS SINCE THE OBSERVATIONS WERE CONDUCTED SIMULTANEOUSLY OVER A LARGE GROUP OF PEOPLE.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--MAN UNDER CONDITIONS OF WEIGHTLESSNESS -U-  
AUTHOR--KAKURIN, L. K  
COUNTRY OF INFO--USSR  
SOURCE--PRAVDA, JUNE 16, 1970, P 3, COLS 1-3  
DATE PUBLISHED--16JUN70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BIOLOGIC WEIGHTLESSNESS EFFECT, HUMAN PHYSIOLOGY, SPACE  
MEDICINE  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1990/1104 STEP NO--UR/9012/70/000/000/6003/0003  
CIRC ACCESSION NO--AN0109223

242 026

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--ANO109223

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DOCTOR KAKURIN MAINTAINS THAT A DOCTRINE HAS BEEN PUT FORWARD WHICH DEFINES NOT ONLY THE MEANS AND METHODS FOR STUDYING PHYSIOLOGICAL PROCESSES UNDER CONDITIONS OF WEIGHTLESSNESS BUT ALSO THE MEANS WHICH IN THE FINAL ANALYSIS WILL ENABLE MAN TO MAINTAIN MENTAL STABILITY, HIGH WORKING EFFICIENCY AND SOME ENERGY RESERVES.

USSR

UDC 8.74

KAKURIN, N. YA., KHAYKIN, Z. S.

"Program for Simplifying and Printing out Logical Formulas Using Digital Computers"

Pribery i sistemy avtomatiki. Resp. mezhved. temat. nauch.-tekhn. sb. (Automation Instruments and Systems. Republic Interdepartmental Thematic Scientific and Technical Collection), 1972, vyp. 24, pp 127-134 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V483)

Translation: A study was made of the algorithm and flow chart of the program for finding the parenthetic representations of the switching functions describing the functioning of digital devices using digital computers. The program is executed on the Ural-4 digital computer. It is noted that the results of the experiments on the digital computer confirm the high efficiency of the algorithm. Thus, machine time of 5-10 seconds is required to find the optimal parenthetic representations of functions of 2-4 variables; for functions of 5-7 variables, 45-90 seconds and 10-11 variables, 3-5 minutes.

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USSR

VASILENKO, Yu. A., KAKURIN, N. Ya.

"One Canonical Form of Representation of the Functions of k-Valued Logic"

Mnogoyustoych. Elementy i ikh Primeneniye [Multistable Elements and Their Applications -- Collection of Works], Moscow, Sov. Radio Press, 1971, pp 102-105, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V348 by G. Gavrilov).

Translation: The author's have introduced so-called  $(i, j)$ -continuous functions of  $k$ -valued logic. Function  $f(x_1, \dots, x_n)$  from  $P_k$  is called  $(i, j)$ -continuous if for any two sets  $\tilde{a}$  and  $\tilde{b}$  of values of variables satisfying the condition  $|\alpha_m - \beta_m| \leq i, m = 1, \dots, n$ , the following relationship is fulfilled:  $|f(\tilde{a}) - f(\tilde{b})| \leq j$ . It is proven that where  $i \geq j$ , the class of all  $(i, j)$ -continuous functions is closed, while where  $0 < i < j < k - 1$  it is not closed (to the operation of superposition). Then, a form of the representation of  $(i, j)$ -continuous functions is presented. It is a natural extension to the case of  $(i, j)$ -continuous functions of the widely known representation of functions from  $P_k$  in system  $0, 1, \dots, k - 1, j_0(x), \dots,$

$j_{k-1}(x), \min(x, y), \max(x, y)$  (REhMat, 1959, 9704). A system is presented

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VASILFNKO, Yu. A., KAKURIN, N. Ya., Mnogoyustoych. Elementy i ikh Primeneniye, Moscow, Sov. Radio Press, 1971, pp 102-105.

consisting of four functions which is complete in the class of  $(i, j)$ -continuous functions.

Abstractors Note. It is easy to see that the classes of  $(i, j)$ -continuous functions are simple generalizations of the classes  $U_{E_1}, E_2, \dots, E_S$ , studied by S. V. Yablonskiy in the work indicated above. Only instead of some divisions of set  $E^k$ , the covering of the set with various (special) systems of subsets must be taken.

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USSR

UDC 681.325.65:537.312.62

KAN, Ya. S., BELYAVSKIY, V. L., VASILENKO, Yu. A., and KAKURIN, N. Ya.,  
Khar'kov Institute of Radioelectronics

"A Multiple-Valued Logic Element"

USSR Author's Certificate No 262954, Filed 25 Jun 68, Published 4 Jun 70  
(from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya  
Tekhnika, No 8, 1971, Abstract No 8B144 P)

Translation: Multiple-valued logic elements (MLE) whose circuitry is based on amplitude, phase, and frequency representation of data are well-known. A common shortcoming of their circuits is that they are monofunctional and not sufficiently reliable in operation, especially when there is a large number of input variables. In order to guarantee reliable operation on the part of an MLE that can perform a sufficiently large number of multiple-valued logic functions, it is suggested that the MLE be constructed in such a way that information can be coded spatially. This can be accomplished by using cryotrons as components of the MLE, since they make it possible to use a purely geometric principle of information conversion. In the proposed logic element, the cores of the cryotrons in each line are connected in series. The beginnings of the cores of the odd cryotrons in an odd and  
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USSR

KAN, Ya. S., et al., USSR Author's Certificate No 262954, Filed 25 Jun 68, Published 4 Jun 70 (from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B144 P)

even line are interconnected. The ends of the cores are also interconnected. The windings of the odd cryotrons in the odd lines and the windings of the even cryotrons in the even lines are connected in series and joined to the unit outputs of the inverters. The unit inputs of the inverters are connected with the sources of the input variables  $x_i$ . The windings of the even cryotrons in the odd lines and the windings of the odd cryotrons in the even lines are connected in series and joined to the zero inputs of the inverters. 1 illustration.

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